Battlespace Systems Support Directorate Bulletin

April 2003
Volume 1, Issue 3

"Serving the Needs of the Battlespace Systems Community"

Inside this Issue

The Quarterly Professional Bulletin Published by the Battlespace Systems Support Directorate

Integrated System Control (ISYSCON) Overview

Submitted by Ms. Jennifer Zbozny, CECOM SEC

Integrated System Control (ISYSCON) is the Army's network management system for the Signal Commander and his staff. Product Manager, Communications Management Systems (PdM, CMS) is the ISYSCON program/system manager. ISYSCON provides horizontal and vertical integration of network management information, to include frequency management, planning, monitoring, and signal command and control. It maintains and disseminates a common network management picture, enabling the soldier to establish and maintain superior communications. The ISYSCON consists of several modules or "tools" that allow the soldier to rapidly and efficiently plan, configure, optimize, monitor, and troubleshoot Army tactical communications systems. This network management "toolbox" enables troops to lay equipment down with confidence that the resultant network will be effective and efficient.

Users employ ISYSCON's Network Planning and Engineering (NPE) module to plan an Area Common User System (ACUS) network. NPE enables planning of Echelons Corps and Below (ECB) networks. It allows users to rapidly and efficiently allocate and assign assets, establish a network topology, perform link and terrain analysis, and view and modify Remote Access Unit coverage.

Once the network laydown is complete and optimized, operators use the Battlefield Spectrum Management (BSM) module to deconflict and assign frequencies. BSM also allows users to perform frequency, co-site, and overshot analysis as well as HF engineering and analysis.

Continued on page 9

The "Key" to Information Assurance: Common Tier 1

Submitted by Mr. Mark Russo, CECOM SEC

The U.S. Army Communications and Electronics Command Software Engineering Center (SEC), Fort Monmouth, New Jersey, is currently supporting the Space and Naval Warfare Systems Command (SPAWAR) in its transitional effort to move the Electronic Key Management System—Common Tier 1 (EKMS-CT1) to full operation and life cycle support. Tier 1 is critical to implementing a robust overall distribution system for Communications Security (COMSEC) key and equipment to the Services worldwide.

EKMS-CT1 is part of a multitiered system to provide COMSEC keying material and equipment throughout the Department of Defense (DOD). Key material is

Continued on page 10

From the Senior Editor's Desk

By Mr. Joseph Ingrao, Deputy Director, Battlespace Systems Support

The Army has undertaken a vast and complex job, to reinvent and transform itself into an objective force, which is smaller, faster, and more lethal. Initially one thinks of the new systems, which must be developed, tested, and fielded in order to support this objective force. We do not develop and field systems quickly enough to infuse the latest technology into the hands of the Warfighter. Looking at the undertaking from a holistic point of view, it is not just the new equipment and systems that are needed to transform the Army, but a fundamental shift in how we develop and sustain systems for the future force.

In order to effect this fundamental change, the Army has been changing its organizational structure, in essence, changing the way it will be doing its daily mission. With reorganizations to the Program Executive Office's (PEO), Army Material Command (AMC) and the creation of the Research Development & Engineering (RD&E) Command, the Army will be streamlining operations and finding efficiencies, but most importantly the changes will create an initial climate of unrest—call it a more chaotic state. In this state, people question how they are going to work in the new structure, what is their role going to be, and how is their job going to change? This initial state is full of new ideas and has a lot of free energy.

Along with the changes, Army leadership establishes the working relationships, and goals for the new organizations. As the new organizations begin to work together and grapple with the task of meeting the Army's goals, they will begin to move from the chaotic state to a more stable state. As we move forward, a "fixed energy" state will begin to emerge. The implementation of new ideas and new methodologies will begin to take over from the total "free energy" state we were in at the beginning of this transformation.■

Advanced Monitoring Display System

Submitted by Mr. Robert Wassberg, CECOM SEC, and Mr. Carney Napolitano, Sensors Technology, Inc.

The Software Engineering Center (SEC) has developed the Advanced Monitoring Display System (AMDS) for Windows software, which provides a Graphical User Interface (GUI) to support the monitoring of ground sensor and radar systems. The AMDS is a software application designed to provide a real-time situational awareness display that is capable of merging disparate tactical information from separate but operationally synergistic systems into a single real-time view of the battlefield. The capability also serves as a single point to exercise control of connected devices and support the dissemination of digital surveillance information reports.

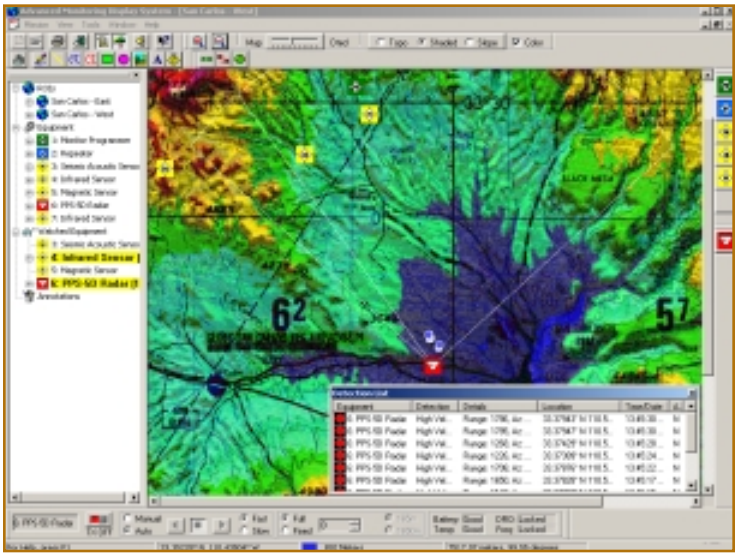
The AMDS provides monitoring, storing, and analysis of information received from the sensory inputs. It currently supports the Improved Remotely Monitored Sensor System (IREMBASS), which consists of three types of ground sensors: infrared, magnetic, and seismic acoustic. The system provides the necessary geographical display and analytic tools to perform an analysis of the sensor data provided from radio receiver(s) in relation to the operational area of interest. Current ongoing development activities include the integration of a ground surveillance radar system's operation, data acquisition, and display into the AMDS, which provides a single source of situational awareness to reduce overall soldier requirements during mission setup/conduct. Additionally, the system will send U.S. Message Text Format (USMTF) messages to the All Source Analysis System (ASAS). Benefits realized are commonality of assets, training and logistics support, and a common collection of detection data.

Through a user-friendly interactive interface, the AMDS software allows the operator to select one or more maps which define the Region of Interest (ROI) for the mission (see figure for AMDS sample ROI). Several analytical tools used to analyze terrain characteristics aid mission planning, which is facilitated through a drag-and-drop capability for placing sensors. AMDS supports the control and monitoring of all connected sensor devices and presents visual and audible indications of sensor detections. Messages are saved to a hard disk file from which reports can be generated and mission activity can be "played back."

Map data is obtained from the National Imagery and Management Agency (NIMA) which presently supports two types of mapping formats: Arc Digitized Raster Graphics (ADRG) and Digital Terrain Elevation Data (DTED). ADRG data is a picture representation of a geographic area. Each pixel location of an ADRG map has a geo-coordinate reference. DTED data is geo-coordinate references tied to elevation levels. To visually represent elevation data, ranges of elevation are grouped together and assigned a color. The colors are displayed at their respective geographic location and, in cases where the terrain has frequent changes in elevation, the relief of the terrain is easily recognized. To enhance the graphical representation of the terrain, there are three types of imaging patterns available for selection, which affect the DTED. This information is useful during mission planning and analysis. This system is easy to use and operators are currently trained in four hours.

Aside from use of AMDS by the regular Army, SEC has supported the National Guard and State Police in homeland security venues. AMDS was also used to support the Canadians in securing the perimeter of the G8 conference in Kananaskis, Alberta Canada.

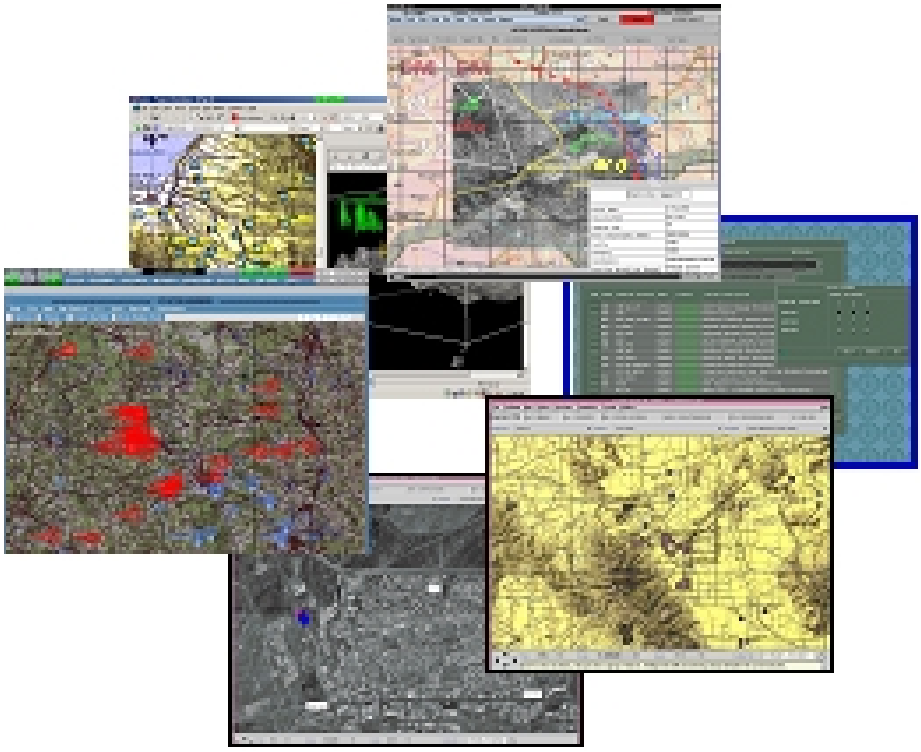
The system is extremely versatile and provides for a quick and easy integration of other sensory inputs because of its object oriented design.■



Interoperability Solutions

Submitted by Mr. Medhat Abuhantash, CECOM SEC

Interoperability challenges between command, control, communications, intelligence, surveillance, and reconnaissance systems continue to hinder Army and Joint Forces operations. The mix of different Operating Systems (OS), protocols, databases, information exchange formats, messaging standards, and mapping tools prevent the Warfighter from sending and receiving relevant tactical information on the battlefield with facility and timeliness. Often, information that contributes to an accurate Common Operating Picture (COP) is spread across multiple stovepipe systems. For this reason, it is necessary to develop and improve upon common methods for sharing information and analytical results.



At the request of the Deputy Commandant for Futures Directorate Integration Center (FDIC), U.S. Army Intelligence Center and Fort Huachuca (USAIC&FH), Arizona, CECOM SEC IFS engineers configured a test environment to support the Vizier battlefield visualization tool Proof-of-Concept demonstration. Vizier is a Battle Command Battle Lab (BCBL) (Huachuca)-developed product that enables the Warfighter to query and share friendly and enemy battlefield information across multiple systems with multiple users.

Vizier allows operators to query remote system databases (All Source Analysis System [ASAS], Maneuver Control System [MCS], Global Command and Control System [GCCS], Army Battle Command Systems [ABCS]) for friendly and enemy data and then plot that data on a common map regardless of the OS and type of database queried. It is a Java application that can operate on personal computers and Unix system platforms and can be loaded onto existing software baselines as an additional application. Vizier's ability to plot cached information from multiple systems onto a common map background provides the analyst with a multi-intelligence perspective or view of the operational area. Vizier also provides a number of analytical tools, to include wargaming, line-of-sight profiling, distance computations, and peer-to-peer collaboration. During the demonstration, friendly and enemy information was successfully plotted on a single Vizier map based on data queried from an ASAS-Light notebook, an ASAS-Remote Workstation Block II (ASAS-RWS II), MCS Light, Command and Control Personal Computer (C2PC), GCCS-Army (GCCS-A), the USMC Intelligence Operation System (IOS)/C2PC-Joint, and GCCS-Integrated Imagery and Intelligence (GCCS-I3) systems.

Until true interoperability is achieved, applications such as Vizier provide practical interim solutions for the Warfighter. Each unit is different and has different information processing requirements that leave gaps in information exchange capabilities. Vizier bridges these gaps by enabling the Warfighter to query and share friendly and enemy battlefield information across multiple systems with multiple users.■

Enhancing SEC IFS

Tactical Automation Support; Virtual Operations Center Functionality

Submitted by Mr. Medhat Abuhantash, CECOM SEC

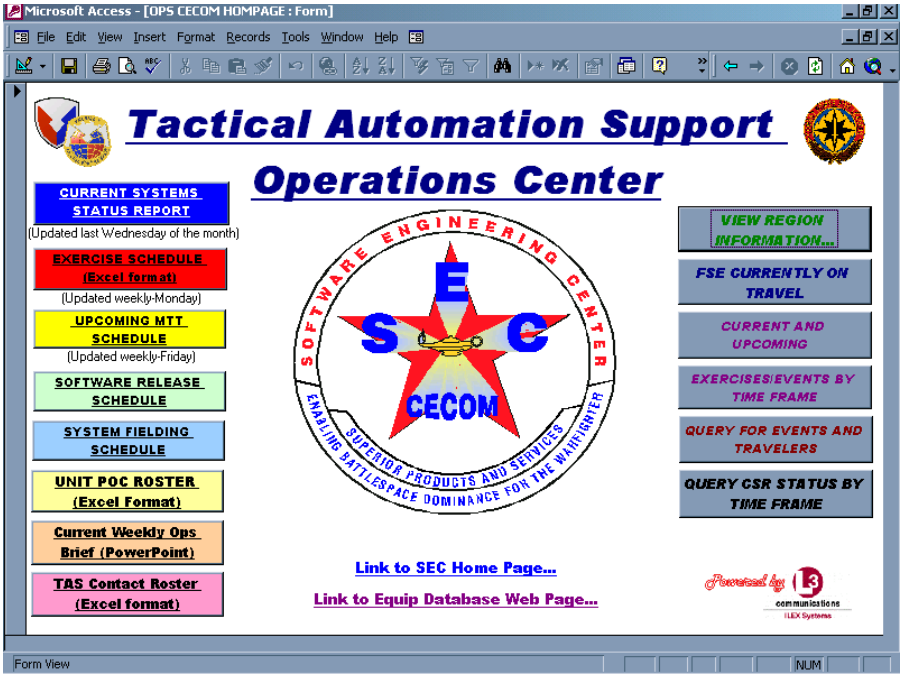
U.S. Army Communications-Electronics Command (CECOM), Software Engineering Center (SEC), Intelligence Fusion Systems (IFS) Division has established an online business intelligence system called the Virtual Operations Center (VOC) to support efficient management of Tactical Automation Support (TAS) activities worldwide. The VOC database is populated and updated with all data related to TAS field operations on a daily basis. These activities provide direct operational support to soldiers who employ All Source Analysis Systems (ASAS) and Terrain and Weather Systems. SEC IFS managers use the system to quickly draw from both current and historical data on systems, engineers, and supported units. The VOC provides a broad overview of TAS Army Military Intelligence (MI) support activities as well as more detailed regional summaries and products. The current implementation of the VOC is not web-enabled; therefore, access to this valuable information is limited. SEC IFS geographically deployed representatives and MI operational users who have seen VOC demonstrations identified a requirement to access the system and associated products.

Army Knowledge Transformation concepts and emerging Information Technology (IT) enabling tools provide a foundation that can be leveraged to meet the requirement to access the system and associated products. The SEC IFS IT team has initiated a project to web-enable the VOC system and provide access to business and operational users worldwide. This effort will convert the current VOC Database Management System (DBMS) to one that provides better support of multiuser access, web-enables VOC applications, and implements authenticated worldwide access to the system information and products via single Army Knowledge Online (AKO) log-in/sign-on. Successful efforts to web-enable the VOC will provide enhanced visibility of TAS activities and support efficient coordination and optimum employment of SEC IFS resources.

New or Improved Features

Limitations associated with the original VOC implementation result from the smaller scope of the TAS management requirement at the time the business intelligence system was designed and initial design implementation using Microsoft Access. Successful VOC use has made the initial design a victim of its own success. The SEC IFS-initiated VOC project is structured to enhance VOC functionality and expand user access to address both of these limitations. Enhancements to the original VOC business intelligence functionality are based on the expanding requirements to manage increasing numbers of deployed TAS Field Support Engineers (FSE) to fulfill Warfighter requirements. Based on demonstrations of VOC functionality, the potential to use the VOC to manage support provided for all Battlespace Systems Support Directorate (BSSD) customers is also being considered. The VOC project will scale functionality to address mission expansion opportunities.

Continued on page 12



Electronic Combat Branch Supports AAAA AES Symposium

Submitted by Mr. Gary Clerie, CECOM SEC, and Mr. Jon Cory, SRI International

The Army Aviation Association of America (AAAA) hosted an Aviation, Electronics, and Survivability (AES) Symposium at the Eatontown Sheraton 5–7 November that was well attended. The Electronic Combat (EC) Branch of the Avionics/Intelligence and Electronic Warfare (A/IEW) Division of CECOM SEC participated extensively by presenting two briefings and supporting multiple laboratory tours and demonstrations in Building 1210 at Fort Monmouth, New Jersey.

The first briefing was presented by Mr. Gary Clerie, EC Branch Chief, and was titled *EC Branch Support to Aviators*. After a brief background and a description of platforms and target sensing systems currently being supported by the EC Branch, Mr. Clerie discussed the primary tasks that the EC Branch provides to aviators: Army Reprogramming Analysis Team (ARAT) support, acquisition/PPSS support, and other support outside of the two main areas.

The ARAT portion of the briefing provided details on the ARAT communications, Mission Data Set (MDS) development, and field support the EC Branch provides to the aviators. The acquisition/PPSS support portion of the briefing focused on the "cradle-to-grave" software support that is and can be provided to Program Managers (PMs) to reduce risk in the successful development and fielding of their systems. Mr. Clerie concluded the briefing with a list of hardware and software products available to the aviators from the EC Branch as well as services available to the aviation community.

The second briefing, titled *ARAT Turns Ten*, was presented by Mr. Jim Holland, SRI International. Mr. Holland served as the first ARAT Project Officer while he was still in the Army. After a brief background and definitions of ARAT's purpose and functions, Mr. Holland discussed the historical time line in the establishment and infrastructure development of ARAT. After a review of platforms and systems that ARAT supports, the next section of the briefing focused on where ARAT is today and the accomplishments that have been achieved in getting there. Mr. Holland then discussed the challenges being addressed by ARAT now and closed the briefing by calling ARAT "the best program no one ever talks about."

In addition to the briefings, the EC Branch also provided tours and demonstrations during the week to Electronic Warfare Officers (EWOs) and other aviators in both the Rapid Reprogramming Communications Infrastructure Laboratory (R^2CIL) and MDS Development Laboratory (MDL). The last day of the symposium was culminated by a group of over 60 EWOs and other aviators touring the EC Branch facilities. The R^2CIL tour focused on secure communication capabilities including web connectivity (SIPRNET access as well as an unclassified web site) and dial-in resources (STU-III and STE upgrades). In addition, the R^2CIL tour included discussions of the ARAT help desk functions and other communication efforts that were being examined (e.g., Palladium Secure Modems). The MDL tour focused on the process involved in MDS development and the support tools (e.g., high fidelity RF simulators) that were used to test the MDS prior to acceptance and release. This included discussions on how threat modes were integrated into the MDS based on operational regions and the necessity of ambiguity analysis to resolve overlaps in RF parameters used to identify the intercepted RF source. Overall feedback from the R^2CIL and MDL tours was very positive with the aviators expressing the desire to spend more time in the R^2CIL and MDL facilities next time they were at Fort Monmouth, New Jersey.■

Mr. Mike Crapanzano provides classroom instruction to Unit EWOs

Improved Data Modem

Operational Flight Program (OFP) Version 2.0 Release 5

Submitted by Mr. Joseph Pham, CECOM SEC

The Improved Data Modem (IDM) is a high-speed digital data link modem that can pass mission and targeting data in near real time among Army Aviation platforms and also with Artillery fire direction centers and other elements supporting the Army Tactical Fire Direction System (TACFIRE) and Air Force Application Program Development (AFAPD) communications protocols. The IDM is currently installed on OH-58D and AH-64C/D helicopters. The IDM provides four simultaneously operating half-duplex radio channels that can operate at rates of 75 to 16,000 bits per second in either analog or digital mode. On the aircraft, the IDM interfaces to other subsystems via the MIL-STD-1553B digital data bus. Mission processing for TACFIRE messages is performed within the IDM, while AFAPD-related mission processing is done in other subsystems.

The IDM OFP Version 2.0 Release 5 (also known as Army User Interface Software Version 2.9I) was developed by SEC based on feedback from the users, TRADOC, and PM-AEC (now PM-AME). This OFP version has many operational improvements, especially in the fire support missions with other tactical data systems. It also contains corrections for several deficiencies existing in the previous fielded version. The specific changes developed in this OFP version include the following:

- Streamlining the flow of AIR to AIR missions, particularly Hellfire, has reduced crew workload.
- Safety angle limits for firing have been updated in accordance with latest guidance.
- Target location information (for example, from the Mast Mounted Sight [MMS] of the Kiowa OH-58D) is now applied automatically to the mission or report of interest while providing the crew with the ability to command an update as needed.
- The format and layout of the various fire support missions and reports have been made as consistent and identical as possible to reduce crew learning and execution time.
- The ability to suppress all radio transmission while allowing reception has been added.
- Scrolling was added to the display of the radio subscriber lists since the number of subscribers possible cannot be displayed on a single static page.

The Formal Qualification Testing (FQT) was completed in August 2002. OT&E testing was conducted at the Aviation and Missile Technical Integration Facility (AMTIF), Fort Hood, in September 2002. Flight Qualification was approved by AMCOM and the Software Material Release was approved and signed by the CECOM CG in November 2002. The fielding of the new software is scheduled to take place in early 2003. This version of IDM software will provide the pilots with much improved features, thus enhancing their combat capabilities to win in the complex digitized battlefield.■

Fire Support Systems are "Open"

Submitted by LTC John Ellis, CECOM SEC

As part of the evolution of the Fire Support (FS) systems, the Fire Support Software Engineering (FSSE) Center has moved all FS systems from a proprietary version of Unix to the Linux operating system. This move to an "open" operating system is just the beginning of the use of Linux within the Army. Other programs such as Force Battle Command, Brigade and Below (FBCB2) and Future Combat Systems (FCS) are planning (or actually developing) for Linux-based systems.

The transition to Linux was based on several factors. Cost and performance were at the top of the list. FSSE started with a Redhat 7.2 baseline, but quickly changed to a generic Linux kernel in order to optimize the implemented solution. The current kernel supports the wide range of FS hardware platforms better than any commercial alternative, and it is robust, reliable, and secure.

The Forward Observer System (FOS) Version 12, hosted on the new Common Hardware product — the Rugged Handheld Computer (RHC) — was the first FS system to be fielded with Linux. Currently, all other FS systems are in their final

Continued on page 13

PC Based Geolocation System

Submitted by Mr. Raymond Santiago, CECOM SEC

The U.S. Army Communications-Electronics Command (CECOM) Software Engineering Center (SEC) has responsibility for the software support of the Guardrail Common Sensor (GRCS) family of systems fielded worldwide. The Communications High Accuracy Location (CHALS) subsystem of GRCS provides the capability to do precision location of electronic sources of radio frequencies. The CHALS employs Time Differential of Arrival (TDOA) processing which uses the difference in time of arrival of signals between sets of pairs of receivers (using the Global Positioning System [GPS] as a time source) to establish precise locations of transmitter locations.

SEC, under the project management of Project Manager (PM) Aerial Common Sensor (ACS), has migrated the CHALS technology to a PC platform. This system is known as the PC Based Geolocation System (PCGS) and has the capability of performing TDOA processing for precision location of a variety of electronic emitters, both friendly and hostile. One of these applications is the U.S. Coast Guard (USCG) National Distress and Response System (NDRS) acquisition program. The USCG is seeking to improve its ability to locate and assist maritime platforms as part of its search and rescue mission. The USCG plans to field a network of electronic listening posts along the coasts of the U.S. to listen for distress calls and then locate them using direction finding for source location.

Recently, SEC demonstrated to the USCG how the PCGS could add a precision location dimension to the NDRS. This demonstration was done with listening posts at Point Loma, Camp Pendleton, Otay Mountain, and San Clemente Island, all in California, but interconnected via the World Wide Web. PCGS demonstrated the capability to monitor and locate emitters at the standard maritime frequencies (i.e., 156.8 MHz, 121.5 MHz, and 243 MHz).

This system has the potential for application to the War on Terrorism and Homeland Defense anywhere precision location of communications emitters is required. The system exhibits the following attributes: open architecture to allow for upgrade to future computer technologies, logistically sustainable, easily integratable with other geolocation systems, unclassified hardware and software as opposed to the classified CHALS systems, user-friendly soldier-machine interface, and easily functionally expandable.■

Common Ground Station Computer-Based Trainers

Submitted by Mr. Alejandro Angel, CECOM SEC

The U.S. Army Common Ground Station (CGS) AN/TSQ-179 (V)1 and AN/TSQ-179 (V)2 are highly mobile, near-real-time, multi-sensor processing and exploitation systems that provide commanders at Corps, Division, and Brigade echelons with unprecedented situational awareness. The CGS acquires, processes, displays, and disseminates data from multiple air and ground sensors including the U.S. Air Force Joint Surveillance and Target Attack Radar System (Joint STARS) airborne sensor, Unmanned Aerial Vehicles (UAVs), U2, Airborne Reconnaissance-Low (ARL), Guardrail Common Sensor (GRCS), and Apache Longbow radar. The CGS also handles a variety of processed intelligence from national, operational, and tactical broadcasts via the Commander's Tactical Terminal (CTT) or the Joint Tactical Terminal (JTT). The CGS can correlate and display all of this information simultaneously and provides a robust suite of communications equipment for secure data link, radio, satellite, and landline communications.

On behalf of Project Manager Distributed Common Ground System, the CECOM Software Engineering Center (SEC) CGS team has completed and fielded version 1.0 of the CGS Hardware and Software CBTs. The CGS HW CBT version 1.0 provides hardware familiarization and operation training for all configurations of the CGS system: AN/TSQ-179 (V)1, AN/TSQ-179 (V)1 Korea, and the AN/TSQ-179 (V)2 with Common Software Baseline (CSB) 1.0. The CGS SW CBT version 1.0 provides CGS operator training for the AN/TSQ-179 (V)2 system with CSB 1.0 software baseline.

CGS HW and SW CBT releases are scheduled for fielding in 2QFY03 (version 2.0) and 3QFY03 (version 3.0). The CGS HW CBT version 2.0 will add hardware familiarization and operation training for the new JTT

Continued on page 13

Integrated System Control (ISYSCON) Overview

(Continued from page 1)

The next step is to use Mission Plan Management (MPM) to generate and distribute team orders to implement the plan, as well as "push" the plan to other ISYSCON systems in the field. This ensures that ISYSCON systems working in the network are operating from the same plan, which eliminates confusion and ensures compatibility among units.

Once the network is established and operational, users utilize the Wide Area Network (WAN) management capability to monitor and troubleshoot the network. The WAN management capability is provided through HP Openview and CISCO Works, Commercial Off-The-Shelf (COTS) software tools that are integrated within ISYSCON. These tools allow users visibility of the network, and provide alerts that indicate trouble with specific parts of the network. Remedy, another COTS tool, allows the soldier to generate trouble tickets based on these alerts. As such, the tools provide users with awareness of network status at all times, and enable users to take proper steps to isolate and fix problems as soon as they arise, thereby maximizing network effectiveness and availability.

ISYSCON provides the soldier in the field with a mechanism to plan and orchestrate seamless, optimal networks with minimum effort and risk. It provides users with the ability to predetermine where to position equipment to ensure optimal communications, without the need for trial and error with actual equipment. It also provides a means to distribute and manage plans, thereby ensuring coordination and cohesion among units working in the same geographical area.

ISYSCON commenced worldwide fielding in FY 01, and is currently fielded to III Corps, XVIII Corps, part of V Corps, as well as National Guard and other units. Fieldings will continue through FY 06.

ISYSCON fieldings were initiated with Phase 2 (P2) Increment 1 (P2 Inc 1) software, which provided the functionality described above. ISYSCON has since released three Post Deployment Software Support (PDSS) software versions: P2 Inc 1.5, P2 Inc 1.5.1, and P2 Inc 1.5.2. P2 Inc 1.5 was the ISYSCON First Digitized Division (FDD) baseline developed to support the management of the asynchronous transfer mode (ATM) switches fielded to III Corps. P2 Inc 1.5.1 and P2 Inc 1.5.2 added enhancements and fixes to include compatibility with Tactical High Speed Data Network (THSDN), High Capacity Line of Sight (HCLOS) radio functionality, and numerous enhancements requested by fielded units.

ISYSCON P2 Inc 2.0 is currently in development; it includes a full operating system and COTS software upgrade, as well as fixes and enhancements. ISYSCON P2 Inc 2.0 is planned for release in September 2003. The Detailed Planning and Engineering Module (DPEM), which will provide the capability to plan and engineer Echelons Above Corps (EAC) networks, is currently in development. It is planned for release in FY 04.

All fielded units are provided with the latest software so they can derive maximum benefit from their ISYSCON systems.

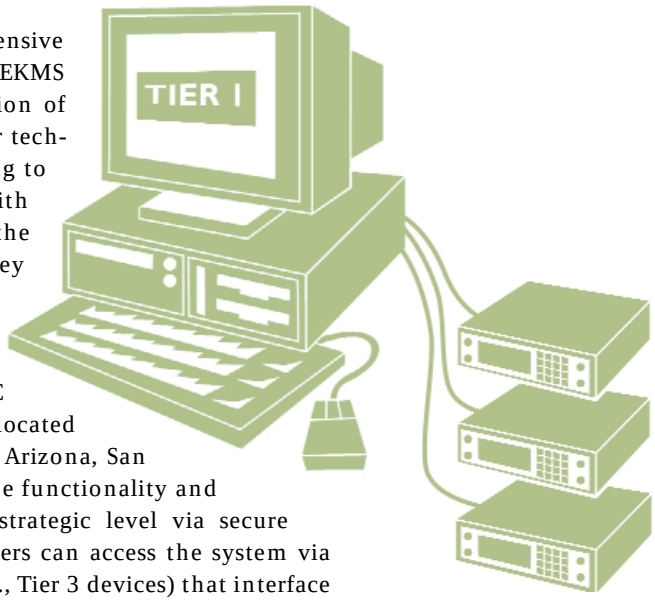
CECOM SEC, in conjunction with PdM CMS, developed and maintains a website to permit users to report problems identified in the field as well as submit recommendations for improvements. PdM CMS and SEC representatives receive nearly instant messages alerting them that a new problem has been reported. This enables rapid and efficient problem evaluation and feedback to the user. The website also allows users to download system documentation, and can be accessed at https://rdit.army. mil/nms.■

ISYSCON shelter and tent

View inside ISYSCON shelter

(Continued from page 1)

essential to securing the communications and non-communications systems throughout the force. Such systems include combat radios through identification friend or foe technologies. Such systems rely on National Security Agency (NSA), Tier 0, approved cryptographic material that assures combat operations are secure from the prying ears of a technologically capable enemy.



Tier 1 provides all Services with an automated and less-labor-intensive system than the current legacy system. In the early 1990's, the EKMS community determined that the current system for the allocation of COMSEC keys was too laborious. They recognized that computer technologies would help reduce the direct and indirect costs of trying to distribute key to the front-line troops. The EKMS community, with technical direction from NSA, embarked on a path to improve the ordering, generation, accountability, and distribution of key material to the Services.

Tier 1 not only automates the distribution of key and COMSEC equipment, but also provides for accountability of all COMSEC material. This is accomplished primarily through three segments located throughout the world. These sites are located at Fort Huachuca, Arizona, San Antonio, Texas, and Mannheim, Germany. These sites provide the functionality and redundancy to support all operations from tactical through strategic level via secure dedicated or dial-up communications. From these sites warfighters can access the system via Tier 2 equipment and load systems using data transfer devices (i.e., Tier 3 devices) that interface with Tier 1 standards and protocols.

To date, SEC has been instrumental in identifying Tier 1 software engineering needs, and developing transition plans. SEC has developed, with the EKMS community, the transition and post production software support plans. These documents are critical to SEC's future life cycle support to EKMS-CT1. Planning with the Project Management office has been detailed and focused on the needs of DOD in providing the best system.

SEC is providing transitional planning to ensure the smooth transfer of Tier 1 from the developer to the operational environment. SEC will provide life cycle support for over 500,000 lines of code, and implement the change control process. The Communications Security Logistics Agency, located at Fort Huachuca, has the daily operational control to effect changes and manage the entire Tier 1 system.

The Current Course

Testing of Tier 1 has to be accomplished in an integrated manner. Integrated testing relies on the cross-connectivity with the other Tiers. Over the past two years, the overall EKMS testing effort has been led by NSA. System and operational testing have identified software and hardware issues, which the EKMS community has resolved in an expeditious manner. A final test was planned for January–February 2003 time frame. The purpose of this test was to provide the final confirmation of the systems readiness to support the Warfighter.

Following the test, the currently named Initial Operating Capability (IOC) Entrance Test, will lead to an IOC. The Army will be the first Service to fully implement the Tier 1 system followed by the Navy and Air Force shortly thereafter. Subject to any required major software, hardware, or documentation updates, EKMS will be fully operational by FY 04.

This final phase will introduce to DOD an automated system that will meet the digitization and transformation goals in the area of information assurance. Tier 1 is the linchpin that will reduce total ownership costs of the legacy key distribution system, and assure military dominance on the modern battlefield.■

Selection Tool

Submitted by Mr. Milton B. Smith, CECOM SEC

The Fire Support Software Engineering (FSSE) Division, Operations and Infrastructure Branch is in the process of marketing a preliminary tool to the Resource Management Division based on a policy guidance change originating from the Deputy of the Software Engineering Center (SEC). The tool is being initially marketed for use within SEC with an eye toward the rest of CECOM.

The tool is called the Candidate Evaluation Selection Automated Tool (CESat). The purpose of CESat is to aid supervisors and selection officials in the construction of job announcements and to subsequently allow assigned evaluation team members to independently evaluate the candidates' submissions using validated, and reliable, question trees to determine the most qualified candidate(s). The results of the selection are to be repeatable using a random selected group of evaluators within the tolerances of the margins of error. To accomplish this margin of error "noise" reduction, a significant amount of work has gone into the construction and validation of the existing question trees.

Some of the key benefits of the tool:

- It assists the supervisor in identifying unique job qualifications for the purpose of the announcement preparation
- It provides a guided means to assist in the selection of the most qualified individual(s) from a list of candidates
- It provides for an unbiased, reliable, consistent, quantifiable, and repeatable selection process
- It removes or reduces the "white noise" from the selection process
- It expands the pool of evaluators to the workforce
- It allows the evaluations to occur semi-asynchronously

The origins of CESat resulted from a need at FSSE to assist the then single primary selection official in the task of evaluating multiple candidates for multiple job openings and to make use of the existing knowledge, judgment, and skill of the workforce in that endeavor. The preliminary tool and associated process has been developed by the government staff at FSSE and has been used and undergone continued refinement in several past selections.■

Bahrain FMS Support

Submitted by Mr. Ray Singer, CECOM SEC

The Fire Support Software Engineering (FSSE) Division, Automation Support Branch, System Support, Test & Fielding Team continues its support of Multiple Launch Rocket System Fire Direction System (MLRS FDS) & Battery Computer System (BCS) fieldings and training for the Bahrain Defense Force (BDF).

The SEC, FSSE Center sent three personnel (one government team lead and two contractors) to the country of Bahrain in early September 2002 in support of Foreign Military Sales. The team began training of 12 Bahrain Defense Force MLRS FDS personnel on 7 September 2002.

The trainees consisted of the MLRS battery commander and the three platoon commanders in addition to the eight senior enlisted soldiers in the battery. The six-week training course was extended, at the request of the BDF, by one week to include support to a command post/communications exercise during the week beginning 19 October 2002 and class graduation on 22 October 2002.

A hardware installation team, headed by the FSSE government training team lead, joined the trainers on 12 October 2002 (for one week) to install four AN/GYK-37 (Lightweight Computer Unit [LCU]) computers in the MLRS Battery and three MLRS Platoon M577 Fire Direction Center (FDC) vehicles.

An informal request for training support for a BDF MLRS live fire exercise at the end of January 2003 has been received. Costs and Level of Effort data have been provided to CECOM SAM-D. The FSSE is awaiting the formal support request.

The FSSE is developing a BCS FMS training program to be presented to the BDF 155MM and 8-inch cannon Battalions later this fiscal year.■

(Continued from page 5)

Specific functional enhancements are noted below.

- The migration of the VOC data from Microsoft Access to the Oracle Relational Data Base Management System (RDBMS) will result in increased performance, improved data reliability, and the ability to store larger amounts of data.

- The new VOC removes the limitation on the number of FSEs entered into the database supporting a CECOM SEC IFS Support Request (CSR). Previously the VOC database was limited to four employees for entering the CSR Estimate Data.

- The new VOC normalizes data such as the FSE's Name, Unit/Organization Name, and Support Type. This data normalization allows for easy report generation. In the previous VOC database it was very difficult to answer a question such as, "How many times have we supported the '101st Airborne Division' and its subordinates in the past year?" The data normalization enforced in the new VOC database will make answering this question a snap.

- The new VOC provides for easier database maintenance. The new VOC database design will help to keep the database clean. Foreign key relationships among tables will allow for cascading deletes of data. For example, if an entire CSR needs to be removed from the database, an Operations Center analyst will only need to delete the record from the CSR table. The cascading delete will automatically remove the record from all other related tables. In the previous VOC database, the record would have had to be deleted from several tables to achieve the same result.

- Several improvements were made to the user interface. All date fields can be double clicked on to start a calendar application to choose the correct date. Many fields are auto-filled based on default data or other business rules that are in place. For example, when the Expense Voucher (EV) Received checkbox is checked for each FSE supporting the CSR, the All EVs Received checkbox is automatically checked. The VOC database maintenance forms have been standardized to provide a similar look and feel throughout the VOC application.

- All forms and sub forms used in conjunction with the VOC will include fixed timestamps that will be automatically updated to reflect the last date/time that specific database entries were modified. The new VOC will include forms and fields that contain expanded entries to enhance visibility of information related to FSE deployment preparation activities.

These enhancements, associated with providing a more capable business intelligence system, are meshed with project goals of web-enabling the system to provide AKO-authenticated access to the information. Improved information sharing and collaboration will result from this aspect of the project and will provide the following specific advantages:

- Support online submittal of CSRs (potential to eliminate CSR paper trail from start to finish).

- Allow controlled access of VOC data to FSEs and CECOM SEC IFS customers being supported via Not Classified But Sensitive Internet Protocol Router Network (NIPRNET).

- Provide users the capability to query the system for ad hoc reports and charts in addition to standardized reporting.

- Eliminate requirement for Microsoft Access or Oracle network client to be installed on machines accessing VOC data. All users will be provided access via standard web browser interface.

- Allow dispersed VOC maintenance with protected access and content by username.

- Implement AKO username/password and single log-in/sign-on with CECOM SEC IFS portal hosting VOC.

The SEC IFS VOC project will serve as the foundation for establishment of a web-enabled SEC IFS Knowledge Center that is linked to the AKO. The VOC efforts will be leveraged to better standardize and organize all SEC IFS information resources and make these resources readily available to employees and customers. The project will provide SEC IFS leaders with a more efficient and cost-effective management tool that will enable the organization to responsively support increasing requirements for TAS support. The ultimate benefactors of the VOC project will be the Warfighters that we support.■

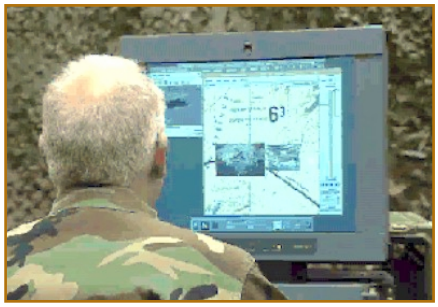
Common Ground Station Computer-Based Trainers

(Continued from page 8)

configuration of the CGS system: the AN/TSQ-179 (V)2 with the CSB 2.0 software baseline. The CGS SW CBT version 2.0 will add CGS operator training for the AN/TSQ-179 (V)2 system with the new CSB 1.b software baseline procedures. Version 3.0 of the CGS HW and SW CBTs will add training for the latest configuration of the AN/TSQ-179 (V)2 system with the new CSB 2.1 software baseline procedures, as well as procedures for operation of the JTT.

CGS Hardware CBT (CGS HW CBT)

The CGS HW CBT is a stand-alone interactive CGS Hardware familiarization and operation training product used in developing, maintaining, and enhancing the skills of the CGS system operator. The application incorporates a hardware familiarization section, realistic 3-D hardware cabling section, and a hardware setup and operating section. It provides the user with the ability to set up and cable required hardware components together and initialize and power up



the hardware. The setup and operating procedures are animated with instructional texts displayed in sequence to provide a structured learning process. The CGS HW CBT is CB based and runs on any Windows operating environment, which enables 24/7 training for an unlimited number of students, all without requiring access to limited and expensive system hardware.

CGS Software CBT (CGS SW CBT)

The CGS SW CBT is a Windows-based, stand-alone interactive CGS System Software Training product used in developing, maintaining, and enhancing the skills of the CGS system operator. The application incorporates a realistic Windows Graphical User Interface (GUI) and a simulated system software procedures section. It provides the user with the ability to learn and manually perform any software procedure using the realistic simulated windows GUI. The unique software training process is separated into two modes: Tutorial and Hands-on. The Tutorial mode enables the user to first learn how to perform a procedure by animating all the necessary steps, and is accompanied by instructional pop-ups. The Hands-on mode enables the user to manually perform the required steps as if he or she is in front of the actual CGS workstation. Immediate feedback of incorrect steps taken by the user ensures proper learning and understanding of the procedure. The CGS SW CBT is CB-based and runs on any Windows operating environment, which enables 24/7 training for an unlimited number of students, all without requiring access to limited and expensive system hardware.■

Fire Support Systems are "Open"

(Continued from page 7)

incremental builds as part of the FS Version 7 systems that are scheduled to begin fielding to the Warfighter in October 2003.

As part of the transition to Linux, FSSE ported several key components of the systems. Two of those products within the FS systems are the Communications Server (CommServer) and the Fire Support Message Server (FSMS). These products work together to handle the various messaging standards and protocols used to support the Warfighter for future, current, and legacy communications and are used in all FS systems.

When FSSE ported these products to Linux, an opportunity was found for other systems using Linux as well. While FSSE had supported other programs in the past with these products, such as Paladin, the work was of a "custom" level of support. With the Linux versions, other programs will be able to use the "generic" version of the CommServer and FSMS better than ever before. In fact, both of these products have been requested for possible reuse by both FBCB2 and FCS to meet their messaging needs.

FSSE has taken a lead role in the use of Linux in not only the Army, but within the DOD/DISA Common Operating Environment (COE) communities as well. Linux is undergoing final COE compliance certification and is in use in various programs throughout DOD. FSSE has applied its expertise and lessons learned for the transition from commercial operating systems to open operating systems to the establishment of Linux as a COE operating system, in terms of technical and managerial areas of emphasis.

Bottom Line: Linux is now part of the Army's system landscape and it is here to stay!■

CECOM SEC IFS Support to Operations and Pegasus Venture, Lucky Warrior, and Internal Look Exercises

Submitted by Mr. Medhat Abuhantash, CECOM SEC

Five U.S. Army Communications-Electronics Command (CECOM) Software Engineering Center (SEC), Intelligence Fusion Systems (IFS) Field Software Engineers (FSE) deployed with the 3rd Army and 513th Military Intelligence (MI) Brigade (BDE) to Kuwait in support of Operations and Pegasus Venture, Lucky Warrior (LW) 03, and Internal Look (IL) 03 exercises. FSEs from the Southeastern, Eastern, Western, and Asian regions fullfilled this mission. FSEs completed Soldier Readiness Program (SRP) with the unit, which consisted of stations on hygiene, shots, dental, HIV, and DNA blood work. The advanced party that deployed to Kuwait comprised one Regional Manager and one FSE to set up and make preparations for the incoming FSEs and equipment. The remaining FSEs deployed after completing SRP with the unit that remained behind.

A site in the desert

The 3rd Army increased its presence in the Combined Joint Forces Land Coalition Command (CJFLCC), and the 513th MI BDE reestablished the Joint Army Control Element (JACE) with All Source Analysis System-All Source (ASAS-AS), All Source Analysis System-Single Source (ASAS-SS), ASAS-RWS Blocks I and II, All Source Analysis System-Communications Control Set (ASAS-CCS), Common Ground Station (CGS), and ASAS-Lights. The 513th MI BDE set up the Technical Control and Analysis Element Forward (TCAE FWD) in the Kuwait desert with ASAS-SS, ASAS-CCS, and Collection Analyst Reporting Terminal (CART). The 513th also set up the Analysis and Control Element Forward (ACE FWD) with ASAS-AS, ASAS-SS, ASAS-RWS I and IIs, CGS, and ASAS-Lights. Other units supported were 377th Theater Support Command, 1st Battlefield Coordination Detachment (remotely U.S. Army Central Command [ARCENT]-Saudi Arabia [SA] and Regional Software Support Activity Forward [RSSA FWD]) in support of this operation and exercises.

SEC FSE working on system

The CJFLCC Joint Intelligence Officer (J-2) webpage was re-created by CECOM SEC FSEs to display intelligence products to be used by all units deployed for Operations, Desert Spring, Southern Watch, Lucky Warrior, and Internal Look.

The deployed forces will ensure combat readiness and force protection capabilities in the U.S. Central Command region. They are also prepared to deter terrorism.■

For Your Information

Now Available on the Web

All 26 previous issues of the "ARAT Bulletin," "A/IEW Bulletin," and "BSSD Bulletin" are now available on the ARAT web site. The issues are available in HTML format for on-line viewing, as well as in PDF and MS Word 97 format for viewing and downloading.

Future issues will also be posted on the site. You are encouraged to download any issue (or issues) for local reproduction and distribution within your agency.

The ARAT web site can be accessed at http://www.sec.army.mil/arat/ or from a link on the A/IEW web site at http://www.iew.sed.monmouth.army.mil/

Help Us Help You

If you are moving, have moved, or your address is listed incorrectly on the mailing envelope, please email Kimberly.Weaver@mail1.monmouth.army.mil (alternate: Sheri.Charpie@mail1.monmouth.army.mil) with the correct address. Many bulletins are returned for incorrect addresses and unknown addressees. We would like to reduce the amount of returned mail and ensure that all of our customers receive the latest issue of the "BSSD Bulletin." Thank you for your support.

ARAT Rapid Reprogramming Communications Infrastructure Laboratory (R^2CIL)

Telephone:

#1 (732)532-9395, DSN: 992-9395 #2 (732) 532-9392, DSN: 992-9392

Email:

Unclassified: ARAT@ems.sed.monmouth.army.mil

SIPRNET: webmaster@arat.army.smil.mil

ATTENTION ELECTRONIC WARFARE OFFICERS!

Electronic Warfare Officers requiring Memory Loader/Verifier (MLV) reprogramming kits, copies of the "ARAT Software and Documentation Toolbox" CD or the "Mission Data Set Training" CD should contact either

Mr. John Amoretti
(DSN: (312) 992-0303/CML: (732) 532-0303) (john.amoretti@mail1.monmouth.army.mil)

or R^2CIL
(DSN: (312) 992-9395/9392/CML: (732) 532-9395/9392) (ARAT@ems.sed.monmouth.army.mil)

or make ToolBox CD requests at:
NIPRNET: http://www.sec.army.mil/arat/ARAT/ARAT_information/forms/CD_request/cd_request_form.htm
SIPRNET: http://www.sec.army.smil/arat/ARAT/ARAT_information/forms/CD_request/cd_request_form.htm

or make MLV kit requests at:
NIPRNET: http://www.sec.army.mil/arat/ARAT/ARAT_information/forms/MLV_request/mlv_request_form.htm
SIPRNET: http://www.sec.army.smil/arat/ARAT/ARAT_information/forms/MLV_request/mlv_request_form.htm

Coming Events

Event/Sponsor	Location	Dates
TechNet 2003	Washington, DC	6–8 May 2003
AOC EO/IR Conference	ARL, Adelphia, MD	14–15 May 2003
15th Annual Software Technology Conference	Salt Palace Convention Center, Salt Lake City, UT	28 April–1 May 2003
Unmanned Systems 2003	Baltimore, MD	15–17 July 2003
Homeland Security Conference	Atlantic City, NJ	8–11 September 2003
40th Annual AOC International Symposium & Convention	Convention Center, Dayton, OH	21–24 September 2003

The Battlespace System Support Community — Key Points of Contact

Agency	Name/e-mail	Comm/DSN	FAX Number
Director, Battlespace Systems Support	Mr. M. Leonard Katz myron.katz@mail1.monmouth.army.mil	(732) 532-1825 DSN 992-1825	(732) 532-3538 DSN 992-3538
Deputy Director, Battlespace Systems Support	Mr. Joseph Ingrao joseph.ingrao@mail1.monmouth.army.mil	(732) 532-0065 (732) 992-0065	DSN 532-3538 DSN 992-3538
Chief, A/IEW Division	Mr. William Walker william.walker@ mail1.monmouth.army.mil	(732) 532-6253 DSN 992-6253	(732) 532-8287 DSN 992-8287
Chief, COMM Division	Mr. Jeffrey Downing jeffrey.downing@ mail1.monmouth.army.mil	(732) 532-5163 DSN 992-5163	(732) 532-3065 DSN 992-3065
Chief, Intelligence Fusion Division	Mr. Medhat Abuhantash medhat.abuhantash@cecomifs.hua.army.mil	(520) 538-6188 DSN 879-6188	(520) 538-7673 DSN 879-7673
Chief, Fire Support	Mr. Eugene Crostley crostley@fssec.army.mil	(580) 442-3350 DSN 639-3350	(580) 248-8661
ESSO	Mr. Steven Cooper steven.cooper@hq.amceur.army.mil	49-621-487-3708 DSN (314) 375-3708	49-621-487-7635 DSN (314) 375-7635
KSSO	Mr. John Franz franzj@usfk.korea.army.mil	DSN (315) 741-6094	DSN (315) 741-6582
Chief, ARAT-TA (Eglin AFB)	Mr. Christian Gilbert christian.gilbert@eglin.af.mil	(850) 882-8899 DSN 872-8899	(850) 882-9609 (C) 882-4268 (U) DSN 872-9609 (C) 872-4268 (U)
Chief, ARAT-SE & EC Branch (Fort Monmouth)	Mr. Gary Clerie gary.clerie@mail1.monmouth.army.mil	(732) 532-1337 DSN 992-1337	(732) 532-5238 DSN 992-5238

The BSSD Bulletin Staff

Send comments, changes of address, and articles to:

U.S. Army CECOM
Software Engineering Center
ATTN: AMSEL-SE-WS
Fort Monmouth, NJ 07703
FAX: (732) 532-3538
DSN 992-3538

Editor-in-Chief
Mr. Joseph Ingrao
BSSD

Editor
Ms. Christine Stensig
SRI International

Technical Editor
Mr. John Hakim
Titan, Inc.

Graphic Designer
Ms. Linda Axford
SRI International

For additional information on these BSSD Bulletin articles, please contact Mr. Joseph Ingrao at above email address/phone number.